

Salt marshes - - they bring life to the shore

By Frank Barton

We have in Duxbury some of the most fertile acres in the world. If this is so, it is natural to ask "where in Duxbury is there anything comparable to the rice paddies of Japan, or sugar cane acreage in the tropics, or the carefully tended wheat fields of Europe?"

Our fertile acres are in the Duxbury salt marshes. We do not have to guess about their productiveness, because the Atlantic marshes have been carefully studied by some of the most eminent scientists in the world, including Eugene P. Odum of the University of Georgia. According to John S. Rankin Jr., professor of zoology at the University of Connecticut, "The tonnage of vegetation that these marshes produce per acre each year is unrivaled by any other natural soil and difficult to equal even in intensive agriculture using commercial fertilizers.

A few animals feed on the marsh grasses. These include marsh crabs, some birds, mice, muskrats, snails and various insects. These consumers of the green grass are not much in evidence. Because we do not see direct use being made of the green products of the marsh, it is easy to overlook their value.

Our ancestors, however, put a high value on marshlands and cut the grass for their horses and cattle. Philip W. Delano, for twenty-two years a Duxbury selectman, took part in salt marsh haymaking when he was a boy. He recalls that his grandfather told him that in the early days, Duxbury marshes were so highly prized that no animals were permitted on them.

For more than two hundred years, the grasses were cut by highly skilled men with scythes. The grass was gathered by specially designed rakes. It was carried on two poles which formed a kind of litter, a man at each end. Conical stacks were made on "staddles," platforms of bunched tree

trunks. The staddles kept the bottoms of the haystacks above the highest tides. When the marsh froze solid, horses and ox-drawn sledges carried the hay to barns.

Sometimes the cut grass was loaded into specially designed boats called "gundalows." These boats brought the hay to town landings where it was transferred to wagons. Gundalows appear early in New England history. Their owners often rented them out by the day, sometimes for purposes other than carrying hay. There are records of loads of wood, stone and shells being transported by gundalows.

The model of a gundalow has turned up in the collection of the Duxbury Rural and Historical Society. It seems probable that the original craft was used on the Back Marsh and possibly on Gurnet Creek Marsh. Philip Delano says that in his boyhood, gundalows were no longer used in Duxbury.

In time, horses and oxen were employed on the Duxbury marshes. The oxen were kept to the firmest ground. The horses wore wooden shoes so that their hooves would not sink in the soft turf. The Community Garden club is exhibiting two of these wooden shoes. One has been loaned by Philip W. Delano and the other came to light in the McClosky barn.

Blair McClosky, in his boyhood, took part in salt hay harvesting, on the Kingston marshes. He recalls that his employer, a breeder of horses, had the salt grasses tested and it developed that they were more nutritious than the upland varieties. This finding concerning the higher protein content of salt marsh grasses has been substantiated by recent research. Blair McClosky recalls further that the horses were so accustomed to Timothy that they would not eat the salt hay unless some of their usual fare was mixed with it. He remembers that salt marsh haymaking was hot, hard work and that the work horses were attacked by swarms of greenhead flies.

The harvesting of salt marsh hay has been memorialized by the painter Martin Johnson Heade, 1819-1904. Heade was famous in his day, then suffered a period of neglect, and is now quite generally considered to have been one of the finest painters America has produced. By courtesy of Yankee Magazine, a reproduction of one of Heade's paintings is shown in the current exhibit. The original is in the Currier Gallery of Art in Manchester, New Hampshire. It is believed that the

painting shows salt marsh haymaking in Marshfield, but Heade's locations are often uncertain.

It is the purpose of the exhibit at the King Caesar House to demonstrate that our salt marshes produce, or help to produce, many of the things we value highly in Duxbury, shellfish in tidal flats, fish caught in the bay from the bridge, shorebirds that stop here during migrations, others that nest here, killdeer that winter in Bluefish Creek, mallard ducks and Canada geese, egrets showing white in creek beds. Few of these animals eat the green grass, some of them do, however, eat the grass when it has been partially decayed and has been broken down to a finally divided form called detritus (rhymes with right-us). They may eat the microorganisms which feed on the detritus or the fish which eat the microorganisms.

The minute flakes of decaying grass are largely responsible for the brown color of marsh waters. Both detritus and bacteria are excellent food. Shellfish consume a kind of detritus sandwich, vegetable matter inside, surrounded by bacteria rich in proteins. Many fish, especially in the immature phases, eat the same fare. For instance, the Atlantic Silversides, also known as Sperling and Shiner, directly consumes the detritus and also eats organisms which feed on it. Schools of silversides help to sustain the striped bass, bluefish, mackerel, polluck, tomcod and other fish in the bay.

In another way, the salt marsh grasses help to promote the abundant life associated with them. The grasses decay the year around and act as a kind of marine compost. We all know that in a garden compost-pile, decay is carried a certain distance. When the compost is spread on the garden, decay continues, releasing chemicals which are vital to new plants.

In the bay and marsh creeks, as the decay of the detritus continues, fertilizing chemicals are released to the surrounding waters. These chemicals from decayed grass, and chemicals from other sources, are spread across the marsh grasses during the high tides which occur twice a month. The life sustaining chemicals are spread evenly, and this is one reason that a salt marsh is one of the most evenly green masterpieces of nature to be seen this side of the fields of Ireland.

Some of the chemicals released by the decay of the detritus are taken up by marine green plants. These include

the one-celled green plants on which many microorganisms feed. Small fish feed on the microorganisms and larger fish on the smaller. Five links in a food chain is not unusual in the ocean. It is well to remember that the food chains in our bay are partly dependent on the decay of the marsh grass.

Many have noted a green tinge on the banks of marsh creeks at low tide. The green color is often produced by masses of mud algae, single cell green plants that are an important food for many microorganisms. Mud algae grow the year around. It has been said that about a quarter of the productiveness of a typical salt marsh can be attributed to mud algae.

On good authority, two-thirds of the game and commercial fish on the Atlantic seaboard are salt marsh dependent. The marshes are essential to them as nurseries or as a source of food. The black backed flounder spawns in Massachusetts Bay and the young fish seek the shelter of the marshes and adjacent waters. It is not known just where the bluefish spawn, but the young "snapper" blues invade the bay at the end of the summer. Along the edge of the spartina grass, there is a rippling of small fish attempting to evade the voracious blues.

Our marshes shelter many wildfowl. Big flights of mallards settle in the Blue Fish Creek marsh. About a dozen great blue herons could be seen there last February. That a dozen of these large birds could at one time find enough to eat in the middle of the winter, is evidence concerning the extraordinary productive power of our marshes.

According to Section 105, Chapter 130, of the General Laws of Massachusetts, enacted in 1965 (Coastal Wetlands Act), the Department of Natural Resources may restrict salt marsh areas "for the purpose of promoting the public safety, health and welfare, and protecting public and private property, wildlife and marine fisheries . . ." A hearing must be held and all concerned owners notified. It has been the unanimous opinion of the Duxbury Conservation Commission that our salt marshes should be protected in accordance with Section 105. A hearing is scheduled in Duxbury for August 18. If the Department of Natural Resources takes favorable action, the restrictions will go into effect in November. After the effective date, people may still do many things with their marsh property, but destruction of the marshes through filling will be difficult to bring about.

John Greenleaf Whittier's famous poem, "Snowbound," depicts a family sitting in front of the fire, recalling pleasant things that happen when the earth is not covered with snow. There are two passages about salt marsh haymaking.

"Where Salisbury's level marshes spread
"Mile wide as flies the laden bee;
"Where merry mowers, hale and strong,
"Swept scythe on scythe, their swaths along
"The low green prairies of the sea."

"Adrift along the winding shores,
"When favoring breezes deigned to blow
"The square sail of the gundalow,
"And idle lay the useless oars."

If the Department of Natural Resources takes favorable action after the Aug. 18 meeting, we will still have to be vigilant. Laws and regulations can be fragile. But with the aid of the state, it will be easier to preserve our "low green prairies of the sea."

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HERMAN H. DELANO, DUXBURY, 1898, GRANDFATHER OF PHILIP W. DELANO, ON
WAY TO THE MARSHES.



Haymaking in the salt marshes in earlier days.